PCT/DE2003/003776

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 46422WO/NZ	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/DE2003/003776	International filing date (*day/month/year*) 13 November 2003 (13.11.2003)	Priority date (*day/month/year*) 19 November 2002 (19.11.2002)
International Patent Classification (IPC) or national classification and IPC H01L 51/00		
Applicant POLYLC GMBH & CO.KG		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:

      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
14 May 2004 (14.05.2004)	12 April 2005 (12.04.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/DE2003/003776

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ The international application as originally filed/furnished

☒ the description:

pages 1-7, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages 1-8, as originally filed/furnished

pages* _____, as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the drawings:

pages _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims		YES
	Claims	1, 3	NO
Inventive step (IS)	Claims		YES
	Claims	2, 4-8	NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims		NO

2. Citations and explanations

This report makes reference to the following documents:

D1: IEDM, vol. 97, pages 331-336 (1997)
D2: Synthetic Metals, vol. 122, pages 449-454 (2001)
D3: US-A-6 045 977

D3 was not indicated in the international search report. A copy is attached.

D1 describes an electronic organic component (see figure 2) with at least two functional layers abutting each other, the first functional layer and the second adjacent functional layer being fabricated from organic material that is identical but differs in conductivity.

D3 also discloses an electronic organic component, as in D1 (see figure 7 and the associated text, in particular column 8, lines 3-5, according to which removal of the exposed material is not necessary).

Thus, these known components contain all the features claimed in claim 1. Claim 1 therefore does not meet the requirements of PCT Article 33(1) because the subject matter of the claim is not novel within the meaning of PCT

Article 33(2).

The applicant argues that, according to D1, a chemical reaction takes place inside particular areas of the original polyaniline layer, yielding two different chemical substances, and that consequently the two functional layers are not fabricated from identical organic material. This argument is not acceptable. It is, indeed, clear that the functional layers disclosed in D1 (and D3) contain chemically heterogeneous substances, since the conductive areas are formed of an emeraldine salt and the non-conductive areas of a leucoemaraldine salt, the emeraldine salt consisting only of phenylenediamine groups, whereas the leucoemeraldine salt also contains quinoidal-diimine groups (see D3, column 2, lines 27-36, and figure 1). However, D3 indicates explicitly that the material in both areas is polyaniline, differing only with respect to its oxidation state (column 4, lines 45-65). Thus, both parts of the layer are formed of polyaniline and are therefore constituted of identical organic material.

It should be noted here that claim 1 is not limited to functional layers of the same chemical composition, but pertains to layers formed of identical organic material. Moreover, the chemical composition of the functional layers is never discussed in the description. Further, a material in oxidized or reduced state is routinely described by different chemical formulae while remaining the same material.

According to D1 and D3, the first and the second functional layers are fabricated in a single process step, a part of the original layer being converted into another modification of the material by partial reaction (see D1,

figure 1 and the associated text and D3, column 7, lines 50-60). The production process described in D1 and D3 is identical to that described in independent claim 3 and therefore the subject matter of this claim also lacks novelty (PCT Article 33(2)).

The functional layers disclosed in D1 and D3 are an insulating and a conducting layer, which differ with respect to their oxidation-reduction potential. The component described in claim 2 differs from this known structure only in that a semiconducting layer is substituted for an insulating functional layer. However, it is known that semiconducting layers can be treated to give conducting layers, the semiconducting layer and the conducting layer differing in their oxidation-reduction potential (see D2, paragraph 2). To fabricate a desired component, a person skilled in the art would modify the teaching as per D1 according to the circumstances to give a semiconducting and a conducting functional layer, without thereby being inventive. The subject matter of claim 2 does not involve an inventive step within the meaning of PCT Article 33(3).

According to D1, electrodes and an insulating functional layer are fabricated in a single process step and in one layer. The choice of a semiconducting functional layer instead of the known insulating layer is dependent on the desired structure and a person skilled in the art would readily substitute the material disclosed in D2 for the polymer described in D1 if semiconducting areas instead of insulating areas were required. The subject matter of claim 4 cannot, therefore, be considered to involve an inventive step.

According to D2, a semiconducting layer is converted into

a conducting layer by treatment with an oxidation-reduction means. According to D1, a layer is selectively endowed with an insulating structure by partial masking and treatment of the unmasked areas with an oxidation-reduction means. Claim 5 of the application constitutes a simple combination of the teaching of these two citations in order to render conductive some areas of a semiconducting layer. The subject matter of the process claims preceding claim 5 cannot thereby be made inventive.

The features of claims 6 and 7 are only some of the many obvious possibilities from which a person skilled in the art would choose according to the circumstances, without thereby being inventive. These claims do not meet the requirements of PCT Article 33(2).

All the features of claim 8 are known from D2 except that, according to this citation, oxidation is not restricted to parts of the functional layer. However, since D1 discloses the selective treatment of a functional layer, this difference cannot be considered to involve an inventive step (PCT Article 33(3)).